UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/533,517	03/23/2000	Zhanhe Shi	CISCO-1254	3821

7590   04/16/2004

David B Ritchie
D'Alessandro & Ritchie
P OBox 640640
San Jose, CA 95164-0640

EXAMINER
RYMAN, DANIEL J

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 04/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/533,517	SHI ET AL.
	Examiner	Art Unit
	Daniel J. Ryman	2665

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _15 March 2004_.
2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-68_ is/are pending in the application.
   4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) _1-68_ is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☐ All   b) ☐ Some * c) ☐ None of:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. _____.
    3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _13_.
4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____ .

DETAILED ACTION

Response to Amendment

1.   Examiner has rejected the amended claims and the new claims using various combinations of the following references: Kamiya et al (USPN 5,974,033), Ganz et al (USPN 6,049,549), Hanko et al (USPN 6,438,141), and Lyles et al (USPN 6,377,583). The current rejection follows.

2.   On pages 23-24 of the Response, Applicant argues that Ganz does not teach estimating the data arrival rate for each polling state since Examiner has "specifically equat[ed] Ganz's 'allocated communication resources' with the claimed estimated data arrival rate". In order to avoid confusion, Examiner points out that, in the current rejection, Examiner has not equated the "allocated communication resources" with the claimed "estimated arrival rate". Rather, Examiner equates the "estimated data arrival rate" of the claims with an estimated rate in Ganz.

3.   Examiner urges Applicant to amend the claims in order to add limitations which will distinguish the claims from the prior art.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 1-3, 11-13, 21-23, 31-48, and 52-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamiya et al (USPN 5,974,033) in view of Ganz et al (USPN 6,049,549).

6.   Regarding claims 1, 11, 21, 31, 59, 62, 65, and 68 Kamiya discloses a method and

apparatus for controlling congestion (col. 15, line 63-col. 16, line 13) in a networking device

having a plurality of input interface queues (col. 7, lines 29-34), where Examiner takes official

notice that, although Kamiya does not expressly disclose a program, programs are well known in

the art as a more flexible way to implement a method compared to hardware, comprising the

steps of and means for: estimating the data arrival rate on each of the plurality of input interface

queues in each sampling state (col. 3, line 63-col. 4, line 45 and col. 4, line 66-col. 5, line 19);

determining the quantity of data to be processed from each of the plurality of input interface

queues, using the estimated data arrival rate on each of the plurality of input interface queues

(col. 3, line 63-col. 4, line 45 and col. 4, line 66-col. 5, line 19); and updating the quantity used in

said polling by repeating said estimating and said determining (col. 3, line 63-col. 4, line 45 and

col. 4, line 66-col. 5, line 19). Kamiya does not expressly disclose determining, for each polling

state, the sequence in which the plurality of input interface queues should be polled using the

estimated data arrival rate on each of the plurality of input interface queues; polling, in each

polling state, the plurality of the input interface queues in accordance with the determined

sequence; and updating the sequence used in said polling by repeating said determining and said

polling with a desired cycle. Ganz discloses, in a polling system, determining, for each polling

state, the sequence in which the plurality of inputs should be polled using the estimated data

arrival rate on each of the plurality of inputs (col. 3, lines 20-34; col. 4, lines 39-44; col. 8, line

17-col. 9, line 63; and col. 14, lines 3-15) where, as broadly defined, the estimated data arrival

rate is equivalent to "monitored data transmissions" (col. 2, lines 45-55 and col. 3, lines 20-29);

polling, in each polling state, the plurality of the inputs in accordance with the determined

sequence (col. 3, lines 20-34; col. 4, lines 39-44; col. 8, line 17-col. 9, line 63; and col. 14, lines 3-15); and updating the sequence used in said polling by repeating said determining and said polling with a desired cycle (col. 3, lines 20-34; col. 4, lines 39-44; col. 8, line 17-col. 9, line 63; and col. 14, lines 3-15). Ganz does this in order to avoid unnecessarily using bandwidth by excessively polling the inputs (col. 3, lines 20-34; col. 4, lines 39-44; col. 8, line 17-col. 9, line 63; and col. 14, lines 3-15). In addition, although Ganz discloses the polling system is used in conjunction with polling of wireless devices, Ganz also discloses that the polling method can be used for a variety of different systems (col. 14, lines 3-15). It would have been obvious to one of ordinary skill in the art at the time of the invention to determine, for each polling state, the sequence in which the plurality of input interface queues should be polled using the estimated data arrival rate on each of the plurality of input interface queues; to poll, in each polling state, the plurality of the input interface queues in accordance with the determined sequence; and to update the sequence used in said polling by repeating said determining and said polling with a desired cycle in order to avoid unnecessarily using bandwidth by excessively polling the inputs. Thus Kamiya in view of Ganz suggests determining, for each polling state associated with a respective sampling state, the sequence in which the plurality of input interface queues should be polled and the quantity of data to be processed from each of the plurality of input interface queues each time the input interface queue is polled, using the estimated data arrival rate on each of the plurality of input interface queues; polling, in each polling state, the plurality of the input interface queues in accordance with the determined sequence and quantity; and updating the sequence and the quantity used in said polling by repeating said estimating, said determining, and said polling with a desired cycle.

7. Regarding claims 2, 12, 22, and 47, referring to claims 1, 11, 21, and 31, Kamiya in view of Ganz suggests that the data arrival rate on each of the plurality of input interface queues is estimated based on the static link capacity of each input interface queue (Kamiya: col. 1, line 59-col. 2, line 13 and col. 3, line 63-col. 4, line 20) where the explicit rate contained in an RM cell will be the desired (static) link capacity for each virtual circuit as long as this desired rate can be supported by all elements along the path.

8. Regarding claims 3, 13, 23, and 48, referring to claims 1, 11, 21, and 31, Kamiya in view of Ganz discloses that the data arrival rate on each of the plurality of input interface queues is estimated based on a dynamically updated measurement (Kamiya: col. 3, line 63-col. 4, line 45 and col. 4, line 66-col. 5, line 19 and Ganz: col. 2, lines 45-55; col. 2, lines 64-67; col. 3, lines 20-34; col. 10, lines 52-56; and col. 10, line 66-col. 11, line 27).

9. Regarding claims 32, 34, 36, and 52, referring to claims 1, 11, 21, and 31, Kamiya in view of Ganz implicitly discloses that said estimating the data arrival rate is performed sequentially with respect to said determining the sequence and the quantity (Kamiya: col. 3, line 63-col. 4, line 45 and col. 4, line 66-col. 5, line 19 and Ganz: col. 3, lines 20-34; col. 4, lines 39-44; col. 8, line 17-col. 9, line 63; and col. 14, lines 3-15) since the data arrival rate needs to be known in order to determine the sequence and quantity.

10. Regarding claims 33, 35, 37, and 53, referring to claims 1, 11, 21, and 31, Kamiya in view of Ganz discloses that said estimating the data arrival rate is performed independently with respect to said determining the sequence and the quantity (Kamiya: col. 3, line 63-col. 4, line 45 and col. 4, line 66-col. 5, line 19 and Ganz: col. 3, lines 20-34; col. 4, lines 39-44; col. 8, line 17-col. 9, line 63; and col. 14, lines 3-15).

11.   Regarding claims 38-46 and 54, referring to claims 1, 11, 21, and 31-37, Kamiya in view of Ganz discloses that the rate at which data are processed from each of the plurality of input interface queues is proportional to the data arrival rate on each input interface queue (Kamiya: col. 3, line 63-col. 4, line 45 and col. 4, line 66-col. 5, line 19 and Ganz: col. 3, lines 20-34; col. 4, lines 39-44; col. 8, line 17-col. 9, line 63; and col. 14, lines 3-15) where the ratio of the data arrival rate to the processing rate, even if not constant, will give the proportional relationship between these two values.

12.   Regarding claims 55-58, 61, 64, and 67, referring to claims 1, 11, 21, 31, 59, 62, and 65, Kamiya in view of Ganz suggests that each sampling state has a first selected time interval, and each polling state has a second selected time interval (Kamiya: col. 3, line 63-col. 4, line 45 and col. 4, line 66-col. 5, line 19 and Ganz: col. 3, lines 20-34; col. 4, lines 39-44; col. 8, line 17-col. 9, line 63; and col. 14, lines 3-15).

13.   Regarding claims 60, 63, and 66, referring to claims 59, 62, and 65, Kamiya in view of Ganz discloses that said estimating a current data arrival rate uses a previous data arrival rate estimated in a previous sampling state (Kamiya: col. 4, line 66-col. 5, line 35).

14.   Claims 4, 5, 14, 15, 24, 25, 49, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamiya et al (USPN 5,974,033) in view of Ganz et al (USPN 6,049,549) as applied to claims 1, 11, 21, and 31 above, and further in view of Hanko et al (USPN 6,438,141).

15.   Regarding claims 4, 5, 14, 15, 24, 25, 49, and 50, referring to claims 1, 11, 21, and 31, Kamiya in view of Ganz does not expressly disclose that the data arrival rate on each of the plurality of input interface queue is estimated using an exponential averaging function based on a constant factor and on the difference in arrival times between a current data packet and a

previous data packet into the input interface queue; however, Kamiya in view of Ganz does disclose estimating the data arrival rate on each of the plurality of input interface queues (Kamiya: col. 3, line 63-col. 4, line 45 and col. 4, line 66-col. 5, line 19 and Ganz: col. 2, lines 45-55; col. 2, lines 64-67; col. 3, lines 20-34; col. 10, lines 52-56; and col. 10, line 66-col. 11, line 27). Hanko discloses having the data arrival rate on each of the plurality of inputs be estimated using an exponential averaging function based on a constant factor and on the difference in arrival times between a current data packet and a previous data packet in order to predict future bandwidths in a manner that allows for any desired statistical measure of data rates (col. 4, lines 44-59). It would have been obvious to one of ordinary skill in the art at the time of the invention to use an exponential averaging function based on a constant factor and on the difference in arrival times between a current data packet and a previous data packet in order to predict future bandwidths in a manner that allows for any desired statistical measure of data rates.

16.   Claims 6-8, 16-18, 26-28, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamiya et al (USPN 5,974,033) in view of Ganz et al (USPN 6,049,549) as applied to claims 1-3, 11-13, 21-23, and 31 above, and further in view of Lyles et al (USPN 6,377,583).

17.   Regarding claims 6-8, 16-18, 26-28, and 51, referring to claims 1-3, 11-13, 21-23, and 31, Kamiya in view of Ganz does not expressly disclose that said networking device is a router; however, Kamiya in view of Ganz does disclose that the dynamic shaping occurring in a network device (Kamiya: col. 3, lines 58-62). Lyles teaches shaping data flows in a networking device, such as a router (col. 7, lines 55-59) in order to bring traffic into conformance (col. 3, lines 27-

50), where it is implicit that a router is a well-known network unit. It would have been obvious to one of ordinary skill in the art at the time of the invention to have the networking device be a router in order to allow the shaping to occur in a well-known network unit.

18.   Claims 9, 10, 19, 20, 29, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamiya et al (USPN 5,974,033) in view of Ganz et al (USPN 6,049,549) in further view of Hanko et al (USPN 6,438,141) as applied to claims 4, 5, 14, 15, 24, and 25 above, and further in view of Lyles et al (USPN 6,377,583).

19.   Regarding claims 9, 10, 19, 20, 29, and 30, referring to claims 4, 5, 14, 15, 24, and 25, Kamiya in view of Ganz in further view of Hanko does not expressly disclose that said networking device is a router; however, Kamiya in view of Ganz does disclose that the dynamic shaping occurring in a network device (Kamiya: col. 3, lines 58-62). Lyles teaches rate shaping data flows in a networking device, such as a router (col. 7, lines 55-59) in order to bring traffic into conformance (col. 3, lines 27-50), where it is implicit that a router is a well-known network unit. It would have been obvious to one of ordinary skill in the art at the time of the invention to have the networking device be a router in order to allow the shaping to occur in a well-known network unit.

Conclusion

20.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gopal et al (USPN 5,889,963) see entire document which pertains to polling interactive communication. Jang et al (USPN 6,175,554) see entire document which pertains to processing cells based on predicted load levels.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Ryman whose telephone number is (703)305-6970. The examiner can normally be reached on Mon.-Fri. 7:00-5:00 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (703)308-6602. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

<div style="text-align:right">

Daniel J. Ryman
Examiner
Art Unit 2665

</div>

ᗡ𝒥ᴿ

Daniel J. Ryman

HUY D. VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600